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PATENT COOPERATION TREATY



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference IT445WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/DE2002/000904	International filing date (day/month/year) 08 March 2002 (08.03.2002)	Priority date (day/month/year)
International Patent Classification (IPC) or national classification and IPC G02B 6/38, 6/42		
Applicant INFINEON TECHNOLOGIES AG		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet. <input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of <u>10</u> sheets.
3. This report contains indications relating to the following items: I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input checked="" type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application

Date of submission of the demand 06 October 2003 (06.10.2003)	Date of completion of this report 17 June 2004 (17.06.2004)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/DE2002/000904

I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed
- ☒ the description:
 pages 1,4-7,9-19, as originally filed
 pages _____, filed with the demand
 pages 2,3,3a,8,8a, filed with the letter of _____
- ☒ the claims:
 pages _____, as originally filed
 pages _____, as amended (together with any statement under Article 19
 pages _____, filed with the demand
 pages 1-22, filed with the letter of 16 March 2004 (16.03.2004)
- ☒ the drawings:
 pages 1-11, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/DE2002/000904

IV. Lack of unity of invention

1. In response to the invitation to restrict or pay additional fees the applicant has:

- ☐ restricted the claims.
- ☒ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ neither restricted nor paid additional fees.

2. ☐ This Authority found that the requirement of unity of invention is not complied with and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees.

3. This Authority considers that the requirement of unity of invention in accordance with Rules 13.1, 13.2 and 13.3 is

- ☐ complied with.
- ☐ not complied with for the following reasons:

4. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this report:

- ☒ all parts.
- ☐ the parts relating to claims Nos. _____

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: IV.3

The report relates to two inventions:

1. Claims: 1-18

An optoelectronic module in which the transmission and/or reception element is arranged on a carrier in an OWG coupling part. A control circuit is arranged outside the OWG coupling part parallel to the OWG axis.

2. Claims: 19-25

A plug arrangement with multi-step housing, to which a displaceable protective bracket is attached.

The prior art US5768456 discloses an optoelectronic module in which the transmission and/or reception element is arranged on a carrier on the OWG coupling part. A control circuit is arranged outside the OWG coupling part parallel to the OWG axis.

In contrast thereto, the first group of claims, claims 1-18, has the following special technical feature (PCT Rule 13.2) (first new feature in claim 4):

- the carrier is designed as a leadframe.

The basic problem of interest is the establishment of the electric contact between the carrier and the transmission and/or reception element.

The special technical feature of the second group of claims, claims 19-24, is:

- the protective bracket for a plug arrangement.

The basic problem of interest is that of protecting the OWG end.

The special technical features and the basic problems are

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/DE 02/00904

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: IV.3

clearly different, and therefore there is no shared
inventive concept within the meaning of PCT Rule 13.1.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/DE 02/00904

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-22	YES
	Claims		NO
Inventive step (IS)	Claims	1-18	YES
	Claims	19-22	NO
Industrial applicability (IA)	Claims	1-22	YES
	Claims		NO

2. Citations and explanations

Reference is made to the following documents:

D1: US-A-5768456

D2: US-A-5960141

D4: US-A-5259052

D5: EP-A-232792 (see search report)

First invention

Novelty and inventive step

D1 discloses an optoelectronic module with a transmission and/or reception element arranged on a carrier. It has a coupling part which is arranged upstream of the transmission and/or reception element and contains an OWG coupling area. The coupling part is partially filled with adhesive. The control circuit is arranged on a sub-carrier outside the OWG coupling part parallel to the OWG axis. The carrier is arranged perpendicular to the sub-carrier.

In contrast thereto, claim 1 defines a coupling part which surrounds the transmission and/or reception element and is filled with a casting compound such that the transmission and/or reception element is embedded.

The basic **problem** of interest is that of providing a compact optoelectronic module that is protected against environmental influences and in which the electrical circuit and the transmission and/or reception element are spatially separated.

A person skilled in the art cannot derive from D1 a suggestion either as to the embedding of the transmission and/or reception element in a casting compound or to the corresponding geometry of the coupling part. From D2, a person skilled in the art can derive the casting of the entire module, including the circuit; however, this requires a different geometry.

The solution as per the invention is not only compact, but also has the advantage that the heat from the circuit does not affect the casting material. The subject matter of claim 1 cannot therefore be derived in an obvious manner from the prior art and involves an inventive step.

Second invention

4. Inventive step (PCT Article 33(3))

D4 discloses a plug arrangement with a plug and separate plug housing. The plug comprises a housing out of which there protrudes an optical fibre. A protective bracket on the plug is pushed back in the longitudinal direction when the plug is introduced into the plug housing. The plug housing forms stops for the plug pin and the protective bracket; the protective bracket is pushed back during plug-in such that it no longer protrudes over the external dimensions of the plug parts.

The subject matter of claim 19 differs therefrom in the steps in the housing and in that it is not the

plug pin but the housing of the plug which is stopped.

This difference is only a minor design variant:

- The variant does not result in a new function. D4 includes the two essential functions: "longitudinal positioning of the plug in the plug housing" (plug pin 66 hits the stop that is embedded in element 162) and "pushing back the protective bracket" (by the tip of the element 162).

- The variant is known from D5. Said document shows a plug with a foldable protective bracket, wherein the plug in the housing is stopped by a step.

The plug arrangement according to claim 19 does not therefore involve an inventive step.

The features of dependent claims 20-22 are likewise described in D1 (2 fibres, fixing arms, detent elements) and therefore do not lead to an inventive subject matter.